ARCTIC 2000:
A PARTNERSHIP IN PROGRESS

Workshop on
ARCTIC MARINE
TRANSPORTATION R&D:

February 1990

Sponsored by the ADVISORY BOARD ON MARINE
TRANSPORTATION R&D

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ARCTIC 2000:

A Partnership for Progress

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ERRATA

PLEASE NOTE THE FOLLOWING CORRECTIONS TO THE TEXT:

1. **Covering letter to Minister of Transport:**

   Amend paragraph 3, sentence 1 to read as follows:

   "The workshop was attended by many competent and capable people from both industry and government who, while recognizing the need for fiscal restraint and the upsurge of interest in environmental control, nonetheless concluded that a renewed partnership of industry and government was necessary to achieve their common goals".

2. **Press clipping, Page 2 should read as follows:**

   "Behind the scenes of the clamor for shipping restrictions in the wake of Exxon Corp.'s oil spill..."

663 8420

Marine Transportation R & D Advisory Board
Conseil consultatif de R & D sur le transport maritime
ULS Corporation
49 Jackes Avenue
Toronto, Ontario
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The Honourable Doug Lewis, P.C., M.P.
Minister of Transport
Transport Canada Building
K1A 0N5

Dear Mr. Lewis:

The Advisory Board for Marine Transportation Research and Development, in its capacity as an advisor to the Canadian Coast Guard and Transport Canada, recently held and industry/government workshop on the subject of Arctic Marine Transportation R&D. The workshop was industry sponsored and co-ordinated by our Arctic Regional Board, and incorporated a wide range of industry and government professionals, as well as representation from the Northern Territories.

Historically, the high risk nature of Arctic marine transportation has led to a strong government/industry partnership in research and development. During the past decade Canada has excelled in the development of the technology needed to support shipping and marine operations in Arctic waters. The Canadian government policy of the early 1970's directed to achieving excellence in navigation in ice covered waters, provided the leadership to accelerate Arctic marine development. This was supported by the construction of the MV ARCTIC to service specific transportation needs from Nanisivik Mines. The spin-off has placed Canada in a position of international leadership in the design of icebreaking vessels, in navigation in darkness, and in the operation of a vessel ultimately converted to safely carry oil in Arctic waters.

The workshop was attended by many competent and capable people from both industry and government who, while recognizing the need for fiscal the less concluded that a renewed partnership of industry and government was necessary to achieve their common goals. In the absence of major Arctic resource development projects, it is suggested that the Canadian Annual Procurement Strategy could well be used as a tool to support those areas of research and development required to permit Canada to maintain and extend its Arctic expertise and to confidently explore those trans-polar transportation systems which will be necessary to serve Canada's interests in the nineties, and into a new century.

.../2

More specifically this would involve the support of research and development into the design, construction and operational aspects of environmentally safe tankers for both resource transportation and re-supply, including the marine capability needed to support East Coast offshore developments.

Ship terminal interface in various locations in ice covered waters required further development and research. The application and extension of present developed technology for the selection of safe tacking through Arctic waters in an environmentally sound manner is essential in the development of transportation needs.

The design of special ships to take care of potential spills that may endanger the Arctic environment would place Canada in a leadership role in an area of great concern world-wide.

The attached document entitled "Arctic 2000 - A Partnership for Progress" expresses in more detail the supporting evidence for such policies. We submit that to remain in the forefont of Arctic technology, to be actively involved with the Northern Territories in the protection of the environment and to maintain our leadership position with our Arctic neighbours into the next century, it is essential that, today, our government defines and endorses the policies necessary to lead us in that direction.

The attached documents are presented on behalf of my colleagues on the Advisory Board for Marine Transportation in the hope that they will contribute to this common direction. I would welcome the opportunity to meet with you and discuss this priority further.

Yours sincerely,

D Maxwell

D. Maxwell
President,
ULS Corporation

Att.

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BACKGROUND

The Advisory Board for Marine Transportation Research and Development during the course of its regular discussions with the four regional boards, came to the conclusion that some emphasis and direction was required for the coming decade. A workshop on Arctic marine transportation R&D was organized by the Arctic Regional Board and took place on February 5-6, 1990 in Ottawa.

It was attended by a large number of professional people from within industry and government who expressed themselves on a wide range of subjects related to marine transportation. The panels discussed current imperatives and prospectives, technical issues and challenges and a strategy for the future.

A complete summary of the discussions and conclusions is available, entitled "Charting our Course: Report" (TP 10151-E).

ACHIEVEMENTS AND STATUS

Canada has made great strides in Arctic development over the past 10 years. The development, construction and operation of the MV ARCTIC has led to research and development into all aspects of operation in hazardous conditions. The operation of the MV ARCTIC has generated a distinctly Canadian competence in the areas of ice navigation, navigation in darkness and general operation of commercial vessels in such an environment.

The construction of the MV ARCTIC was primarily triggered by a need for a vessel to transport concentrates from a mine at Nanisivik. At this time, however, there are few major Canadian projects in the Arctic at a stage where immediate development calls for the support of research. Hence, there is inherent danger that the initiatives achieved by Canada in the past will be lost if continuity is not maintained into the future. We must follow through and further our ability to properly control and develop marine transportation in Arctic waters, if we are to maintain our technological leadership.

Canadian participation in co-operative research and environmental monitoring in the circum-polar regions has opened up opportunities for Canadian companies to sell their services to other Arctic neighbouring countries.

The development of cold region technology and its application in sophisticated products and services has given Canada world recognition, particularly in the field of navigation equipment and design of Arctic class vessels.

CANADIAN TANKER OPENS UP ARCTIC WATERS

Sunday Herald, April 1, 1990

By Gordon Jaremko

Behind the scenes of the clam or for shipping restrictions in the wake of Exxon Corp.'s oil spill last year offshore of Alaska, a made-in-Canada tanker is opening up far tougher waters, much farther north.

Where the M.V. Arctic sails, sea ice is up to 2.5 metres thick. Deep snow conceals tall ridges. Steersmen contend with 24-hour darkness. Normal compasses are useless in the neighborhood of the magnetic north pole.

While the vessel is only about one-tenth the size of the super-tankers plying southern oceans, it is big enough to be a commercial enterprise: 210 metres long, 23 metres wide.

The ice-breaking OBO, or "ore-bulk-oil" tanker, carries 25,000 tonnes of lead and zinc or 145,000 barrels of oil.

The M.V. Arctic does the job where the place names recall epics of polar exploration: Baffin Bay, Lancaster Sound, Parry Channel, Bathurst Island, Melville Island.

A 208-kilometre leg of one trip, across Lancaster Sound to the Nanisivik mine of Strathcona Mineral Services Ltd. took 26 days of 'round-the-clock ramming, backing and ramming again through pack ice.

When the ship picks up cargoes for Calgary's Panarctic Oils Ltd. from its Hunt Horn field on Cameron Island - and it did twice last summer, behind the scenes of the Exxon tanker fuss - it enters the most forbidding region of all.

Designated "ice zone one" by Canadian shipping regulations, the area is clogged with floating glaciers that thicken through years of winter freeze-ups which the Arctic summer is too short to melt entirely.

Yet the voyages of the M.V. Arctic, described by Canarctic vice-president Martin Luce to a recent international conference in Calgary by the Society of Naval Architects and Marine Engineers, are not news.

The lack of attention outside a narrow circle of professionals is the highest compliment possible for the shipowners: Ottawa-based Canarctic Shipping Co., a private consortium 51-per-cent financed by the federal government.

Twelve years after the vessel was launched as a trial run at turning Arctic travel into a matter of business routine to tap northern resources, the operators say the goal is in sight.

By now, Luce reported, the hull and bow of the ice-breaking tanker have proved they can withstand just about anything. Only a bigger engine would be necessary for the ship to ram its way through even tougher voyages.

The only damage since a 1984 refit to toughen the M.V. Arctic for its Panarctic oil loadings was done to a bulwark or guard rail on its deck, when the ice attached from an unexpected direction.

Luce reported, "This was caused by a large piece of ice which had been broken by the vessel. It rotated on edge so that it towered above the vessel, then, continuing its rotation, it fell onto the deck, flattening the bulwark."

After a long string of successful voyages, the vessel has developed an Arctic trading season that lasts most of the year.

In summer, the ship takes batches of oil to Arctic mines, native communities and electric power stations, then loads most of Panarctic's output on other tankers, at ice-free rendezvous points, for deliveries to Montreal.

The rest of the year, the M.V. Arctic is a fixture of the international product-shipping trade.

Lead and zinc concentrates are delivered to markets from Europe to the Gulf of Mexico. The tanker easily carries winter loads of jet fuel, gasoline and other fuels up the St. Lawrence River or through the Baltic Sea.

While Canarctic isn't kidding itself that markets and prices will justify building a super-tanker-sized version of the M.V. Arctic any time soon, Luce adds that the preliminaries for the next, giant step are coming together.

"We have developed a lot of unique Canadian technology for moving in ice," he said, including finely tuned, electronic navigational aids as well as the brute strength to bash through the polar pack.

Luce said Canarctic has learned enough at least to design a northern shipping giant, and will try its hand at the exercise over the next four or five years.

When the Arctic's turn comes for large-scale resource development, the Canadian consortium aims to be ready to be in on the ground floor with equipment proven to work safely in the harshest conditions.

GOVERNMENT STRUCTURE AND INDUSTRY RELATIONSHIP

Throughout the workshop a great deal of comment was made regarding the extensive number of government departments involved in varying degrees in marine transportation development, or associated studies. There appeared a sense of need, at a minimum, to integrate the work being carried out by a great variety of interests. The concerns of the Science Council for consolidated information sources and improved information networks were supported.

In addition, if it is recognized that government policy looks to science and technology as an important stepping stone to the 21st century for Canadian industries, then each avenue for development must find its own methods to become compatible with overall government policies and to have its projects identified in that policy context. If a co-ordinated policy is defined by government then it will naturally follow that in the variety of government procurements the position of Canadian industry related to marine transportation will be addressed.

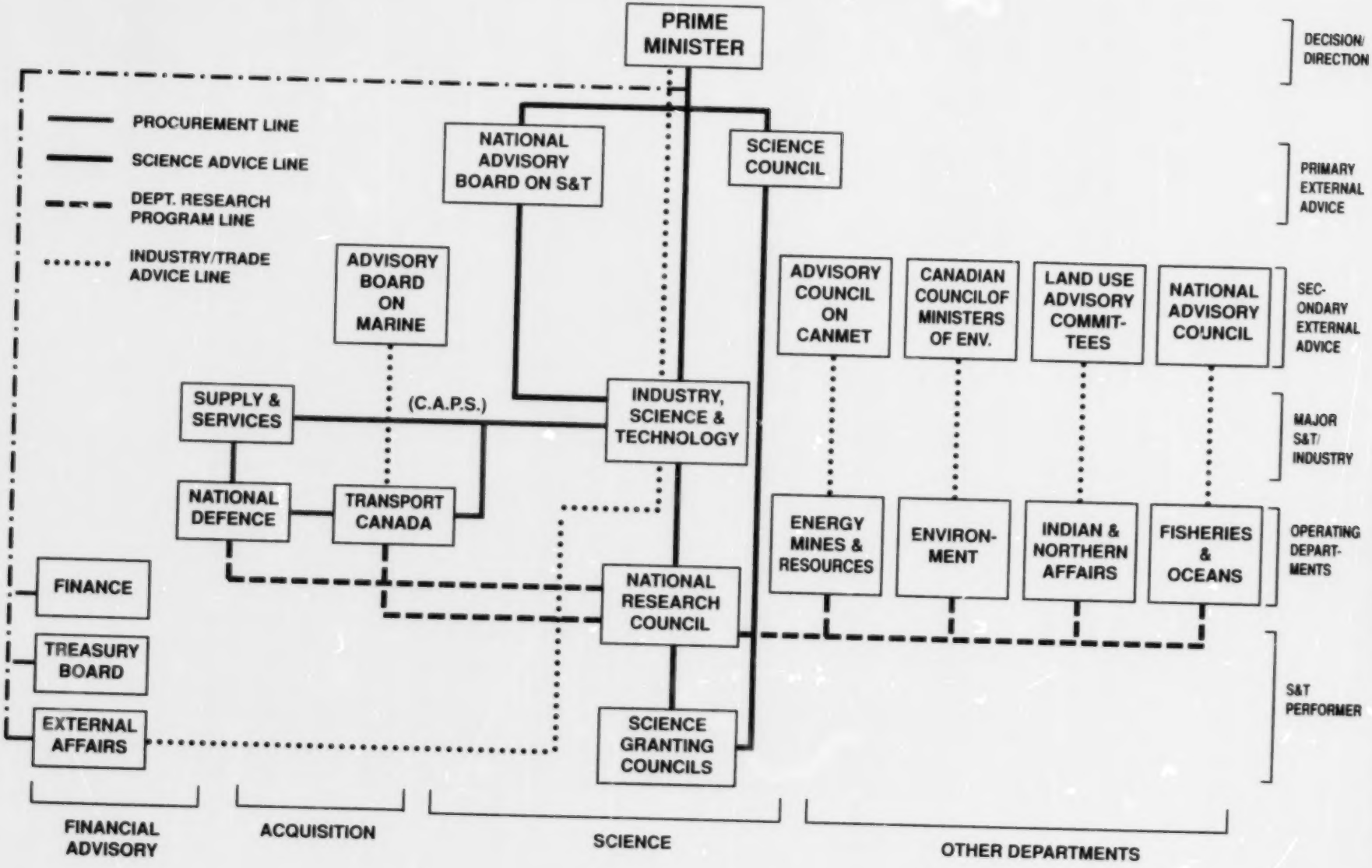
The specific interaction of departments, advisory groups, and research agencies involved is indicated on the schematic diagram enclosed. If each and every department is aware of a general direction of policy for marine transportation in Arctic waters then many of their programmes can assist in this development. The concept envisaged is to ensure that every government department and particularly those with major procurements, will ensure that the direction of their procurement is compatible with the policy of supporting research and development leading towards excellence in marine transportation in the Arctic environment. Such procurements as shipbuilding, marine equipment, vehicles, space and advanced technologies, all represent areas of significant potential for development in Canada. Several hinge directly upon clarity in our Arctic policy.

Industry interacts and co-operates with government at all levels by servicing operational requirements as well as participation in research. Business associations and advisory boards likewise extend the links of communication. The partnership of industry and government at all levels will ensure the efficient implementation of R&D programmes designed for the development of the country as a whole.

A great deal of interest was manifested at the workshop by representatives from the Northern Territories and it was made abundantly clear that they likewise would be happy to be partners in any kind of research and development affecting the northern areas. It was considered that a great deal of assistance and experience could be obtained by input from those living and operating in these areas.

PROCESS DIAGRAM FOR FORMULATING INDUSTRIAL S & T POLICY THRUSTS

(EXCLUDES PROV. AND TERR.)



WORKSHOP CONCERNS AND ISSUES

While the current international climate indicates an upsurge of interest by our Arctic neighbours in technology related to Arctic marine transportation, there is also a lull in project requirements on the Canadian side. The lack of immediate development of oil and gas resources, and the associated need for transportation out of the Arctic, combined with the lack of necessity to immediately develop certain mineral resources, presents a picture where the commercial development anticipated in the next few years will not naturally support extensive new research and development programs. With this in mind, concerns were expressed that the position of Canadian Arctic technology will lag behind others if we do not find other methods of progressively maintaining and developing this knowledge. Major projects will ultimately emerge and they will carry with them project specific needs for R&D, but by this time it could be too late.

With greater international interest in the Arctic and Antarctic, the competition from the rest of the world may be such that it will affect the industrial profile in Canada. With no immediate industrial development, there is likely to be a decrease in Arctic marine R&D investment. As a result, the key areas of Canadian technological expertise are in danger of disappearing.

Canada has a major stake in the "polar-rim". It has a need to maintain technological advantage built up during the last decade. The strategy must be to maintain technological sovereignty in Arctic waters - that is maintaining the ability to control and direct the development of all phases of transportation in that area. Co-operation with circumpolar partners, especially the USSR and other major Arctic players, is of vital importance, but such partnerships and relationships can only be developed from a posture of technological strength.

The capability for proven year-round marine transportation in the Arctic still does not exist. The focus for the next decade must be to develop the marine capability to unlock Arctic energy resources in the next century. We must re-state our goals to sustain our position of leadership into the 21st century.

ALASKA TO TEST POLAR ROUTE TO EUROPE

The Journal of Commerce, Wednesday March 28, 1990

By John Devies

Ports in Alaska are drawing plans to move the first American cargo to Europe through a polar ice channel across the Soviet arctic, just as the United States and the Soviet Union move toward a new bilateral shipping agreement.

Ports Alaska, a group of 14 Alaskan ports, said it will demonstrate the potential of the Soviet ice channel this summer by moving containers of salt cod through the channel to Europe.

Larry Dinneen, co-chairman of Ports Alaska and executive director of the Port of Anchorage, said preliminary plans call for Vladivostok-based Far East Shipping Co. to carry the preserved fish from Dutch Harbor in the Aleutians to buyers in Portugal.

"We're going to do it this summer, one way or other," he said. "If we have to put it onto Soviet fishing boats, we're going to get that fish to Europe."

Executives at Alyeska Seafoods in Dutch Harbor, which produces salt cod, frozen cod and canned salmon, have expressed interest in shipping their products through the Soviet channel on a trial basis.

Paul Fuhs, mayor of Unalaska and major proponent of the new route, said Alyeska has agreed to provide cod for the demonstration shipment.

Mr. Fuhs said Soviet managers at Far East Shipping Co. are proposing to make three calls a month into Dutch Harbor with ice-strengthened ships capable of hauling the equivalent of 750 20-foot containers.

"The Soviets are saying, 'Forget the demonstration - we do this all the time,'" Mr. Fuhs said. "But the seafood shippers are saying, 'Show me - show me that you can handle the product to normal shipping standards so that it arrives in good marketable condition.'"

Soviet icebreakers maintain the polar channel along that country's north coast year-round to provide access to northern cities along rivers flowing into the Arctic Ocean. In practice, most freight moves during the late spring, summer and early fall, when ice conditions are favorable.

Alaskan shippers want to try the Soviet route because they believe it may be quicker than shipping fish to Europe by way of the Panama Canal.

U.S. and Soviet negotiators are scheduled to meet in late April in Moscow to try to hammer out a bilateral agreement on issues such as cargo sharing, advance notice for ship calls near military bases and tariff levels.

Previous agreements that allowed Soviet liner service at West Coast ports were allowed to expire after 1979 as part of a series of trade sanctions adopted by the Carter administration to protest the Soviet invasion of Afghanistan. A separate fisheries treaty allows Soviet ships to continue to call at Dutch Harbor for supplies.

Mr. Dinneen said the Alaskan ports would like to move the demonstration cargo under a new bilateral agreement, but are prepared to use provisions in the fisheries treaty if the new shipping pact is delayed.

Both the port executive and those involved with the negotiations in Washington, D.C., said substantial progress has been made in talks with Soviet maritime authorities. Tentative agreement was reached on a cargo-sharing arrangement under which one-third of cargo moving between the countries would be moved on U.S.-flag ships, one-third on Soviet ships and one-third by any party, one U.S. negotiator said.

Grain exporters have argued that such a rule should not apply to bulk cargo because the U.S.-flag fleet is small and would be in a position to charge shippers higher prices than they would have to pay if ships of any registry could carry the cargo.

The Soviets are still pressing for the right to call at U.S. ports with one day's notice instead of the 14 days now required. Mr. Dinneen said the U.S. team is expected to offer access to the Soviets on four days' advance notice.

Merits of granting the Soviets most-favored-nation status, with its reduced schedule of import tariffs, remain under discussion, the U.S. negotiator said.

He said U.S. and Soviet teams are sufficiently close that both sides regard it possible that an agreement could be concluded at the end of next month. If so, they would recommend that it be considered by President Bush and Soviet President Mikhail Gorbachev at their scheduled summit in June.

Mr. Dinneen said plans for the demonstration shipment call for salt cod to be delivered on an all-sea route to Portugal.

"Everybody up here is getting primed up to move at least the salt cod," he said. "It will be an insignificant amount in terms of volume, but it will show how it can be done."

Fish processing firms in Alaska are keenly interested in the polar route to Europe as a possible means of marketing high-value Alaskan seafood more quickly. Some Alaskan shippers complain that most available shipping services take at least two weeks to move fresh products to European markets.

WORKSHOP CONCLUSIONS

The demand for Arctic marine transportation R&D is now being shaped by a new strategic framework. Traditional forces have been replaced with new priorities, those related to environmental integrity and Canadian competitiveness. They offer Canadian firms and researchers the opportunity to exploit this lead and to gain new expertise through the sale of their services on the world market.

1. Circumpolar Activity

There was recognition that Canada plays a leading role in the international community responsible for the Arctic. To speak of the "Canadian Arctic" is myopic; instead, Canada is one of eight nations that jointly manage the Arctic. This more globalist view is reflected in Canadian participation in a burgeoning number of bilateral and international Arctic initiatives, such as the Canada-USSR Science and Technology Agreement and the Finnish Initiative on environmental monitoring and protecting the Arctic. As a result, Canadian firms with Arctic experience and expertise are enjoying increased opportunities to sell their services to foreign markets, and to participate in research programmes financed jointly with or solely by foreign parties.

There is increased oil and gas activity, particularly in the waters off the Soviet Union. This area is known to have extremely large reserves of oil and gas, and the Soviet Union, faced with growing internal economic crisis, is turning to foreign firms to help with this development. Canadian firms are well placed to assume a leading role in this emerging market, providing they maintain their technological edge.

2. Cold Region Technology Expertise

Canada is recognized as a world leader in cold region technologies. With the Arctic serving as our laboratory, Canadian firms, universities, and government research institutions have acquired a considerable knowledge base operating in cold regions and developed many products suitable to cold region applications. These products and services are some of the most advanced and sophisticated available anywhere, and are highly competitive on world markets. Novel designs for Arctic class ships and sophisticated navigation equipment are to name but two products in which Canada leads the world.

ICEBREAKER STUDY EXCITES INTEREST

From Kazuo Takita, Tokyo

The construction of two 60,000-tonne icebreakers currently under study by Sakhalin Oil Development Co (Sodeco), a Tokyo-based partner in the Sakhalin oil-gas project with the Soviet Union, has attracted the interest of Japanese shipbuilders.

Japanese shipbuilders have built South Polar expedition observation ships with ice-breaking capability for the Ministry of Education, but have no experience in building a merchant marine icebreaker.

However, the industry has jointly carried out technological research and development (R&D) projects to build an icebreaker for oil exploration in the Arctic Beaufort Sea in Canada.

Since then, the Ship Research Institute, part of the Ministry of Transport in Tokyo, has been exchanging technical data and reference materials with Canada to further advance R&D on ship design for Arctic navigation.

Research results will be announced before the end of March 1992.

According to the study, Sodeco will require at least two 60,000-tonne icebreakers to explore gas and oil fields and transport gas and crude oil from the continental shelf in Sakhalin to Japan.

The company will import 5 million tonnes a year beginning in 1994.

The icebreaker must be capable of navigating through the 50-centimetre thick ice in the sea.

Sodeco was established in Tokyo in October 1974 and participated in oil and gas development projects in the continental shelf of the Soviet-held Sakhalin Islands.

The project partner is the Soviet Ministry of Foreign Trade.

Sodeco has discovered two promising structures on the continental shelf as a result of the exploration up to 1982.

One is Odoptu, discovered in 1977, and the other Chaivo, discovered in 1979.

It completed the exploration in 1983 following five drillings on the Odoptun structure.

New opportunities exist and existing technologies need to be expanded, but this can only be achieved if sufficient resources are made available to support R&D in this area. Other nations, such as Japan, Norway and the United States, are channelling increasingly more resources into cold region techologies, and the technological lead that Canada established during the 1970's and early 1980's is rapidly diminishing.

3. Development of Circumpolar Trade Routes

World trade continues to expand with close to 90 percent by volume carried by the world shipping fleet. For longer routes, such as between Japan and Europe, the transit time can exceed one month. The Northwest and Northeast passages through the Arctic offer one way to dramatically shorten shipping times. In light of the pronounced changes that have taken place in the Soviet Union, there is a possibility the Northeast passage will eventually be made available for commercial transit. A Soviet trade delegation is to visit Canada in May 1990 to discuss cooperation in this area. Likewise, Canada could consider transit through the Northwest passage as an alternative shipping route at a future time.

The opportunity for Canadian expertise lies in two areas. Canadians are leaders in the design of Arctic class ships and Canadian firms have developed the support services that are required to keep polar shipping routes navigable. These services include remote sensing, atmospheric and ice forecasting, and charting. These are all areas where Canadian technology is among the world's best.

4. New Marine Transportation Services for the Arctic

Traditionally, Arctic marine transportation has been associated with the transport of resources (oil, minerals and, to an increasingly lesser extent, grain) from the Arctic, in addition to community resupply. This traditional view is perhaps too narrow, and other marine transport opportunities were identified by Workshop participants. These include:

- new ships and technologies to improve community resupply;
- special ships designed to protect the Arctic environment; and
- ships of opportunity (including tourism).

FIRM INTERESTED IN SHIPPING COD VIA POLAR ROUTE

The Journal of Commerce, Friday, March 30, 1990

By John Davies

SEATTLE - Seafood shippers wanting quick passage to Europe by a polar route say rates and schedules will be key factors in their decision whether to use the Soviet channel.

Winn Brindle, general manager of Alyeska Seafoods here, said his company will consider the possibility of shipping cod from Dutch Harbor, Alaska, to Europe on the polar route if a pending bilateral shipping treaty with the Soviet Union is approved.

"We're going to have to kick it around the group - there are a lot of things like rates and timing and insurance to be considered," he said.

Alyeska now ships most of its salt cod to Europe on unscheduled freighters, which take up to 50 days to haul it form Alaska through the Panama Canal and then across the Atlantic.

"If the Soviet route would be faster, it's something we'd want to check into," Mr. Brindle said.

Far East Shipping Co., a Soviet state firm, has proposed regular calls at Dutch Harbor to pick up seafood for delivery to Europe via an arctic channel along the north coast of the Soviet Union.

Mr. Brindle said that like any shipper, Alyeska will have to consider rates and whether transit can be made safely at the time when cargo is available. He noted, for example, that most salt cod is produced in the winter and that the Soviet channel may be reliable only in the summer.

"But I think we would be interested in looking at a proposal," he said.

Frank Kelty, a seafood manager at Alyeska's plant in Dutch Harbor, said the company definitely is interested in quick, low-cost shipments of cod to Europe.

He noted that prices in Norway and other Scandinavian countries are rising because fishery resources there are at very low levels.

But he also said that cost and reliability will be critical to use of the Soviet channel. "I'd be very leery of shipping any product through ice in the winter, because there have been times when ships have got stuck," he said. "Shipment in summer is something we'd want to look at."

If cod shipments prove successful, Alyeska might also want to explore shipment of canned salmon to Britain via the Soviet route, he said.

Larry Dinneen, assistant director at the Port of Anchorage, and Paul Fuhs, mayor of Unalaska, have been working in an association of 14 harbors known as Ports Alaska to organize a demonstration shipment by way of the Soviet route this summer.

They said they believe commercial use of the polar route would help bring Alaska more into the mainstream of global cargo movement.

"We think the Soviets would want to haul cargo both ways and would backhaul something from Europe for either Japan or the West Coast," Mr. Fuhs said.

Executives at other large seafood companies operating in Dutch Harbor and Seattle said they are aware of the polar route project, but added that they either are waiting for approval of the Soviet bilateral shipping agreement or that they see no reason to change their current handling methods.

5. Arctic Marine Transportation R&D Challenges

There is a danger of complacency within the Arctic marine community that all the difficult problems have been solved with respect to operating a marine system in the Arctic. A number of serious technological gaps remain and their solution is critical to year-round resource transportation:

- medium-scale ice pressure knowledge;
- use of high strength steel;
- welding procedures;
- station keeping (vessel-terminal interface);
- hull form comparisons;
- full scale testing and calibration;
- safety and evacuation equipment;
- ice modelling;
- ship performance in ice;
- ice condition forecasting;
- ice navigation equipment and procedures;
- terminal facilities; and
- oil spill control and clean-up.

6. Environmental Protection and the Environmentally Safe Ice Tanker

An emerging strategy is a comprehensive "programme" to develop an environmentally safe ice tanker system. The core research needed to develop such a project includes:

- Ship design and systems to reduce the cost of Arctic transportation;
- Understanding and safeguarding the environment; and
- Development of ship-terminal interface.

This particular approach appears to offer three clear advantages. First, an environmentally safe ice tanker system would support many of the strategic considerations developed above -- it would help open up the polar routes, support the government's environmental agenda, and it would enable Canadian firms to gain further expertise in cold region technology. It would also provide Canada with the necessary technologies to develop offshore resources on the East Coast.

Second, a considerable amount of Arctic marine R&D currently underway is related to safety. However, even though safety is traditionally viewed as the safety of life and property, it also extends to safety of the environment. In this context, precision (ice) navigation is viewed as a central element in risk reduction -- to navigate safely is to protect the environment.

Existing R&D programmes aimed at improving safety are, by their very nature, supporting environmental protection as well. The significance of this point is that support for the environmentally safe ice tanker system would require only modest changes to existing programmes and objectives, though, of course, additional funding for other R&D programmes would be required.

Finally, linking Arctic marine R&D to environmental protection supports the foremost priority of the general public, and thus of the government. This offers the basic "target" around which all interest groups can rally. It is consistent with or supportive of the new Environmental Agenda and should, therefore, fall on receptive ears.

STRATEGY

It is the conclusion of the Advisory Board for Marine Research and Development that the concept of partnership between industry and government is the only route to take. Future industry research and development can be integrated with government requirements. It is recommended that the government policies clearly define the need to ensure the natural development of the Canadian Arctic marine transportation in co-operation with peoples of the Northern Territories and by joint ventures with our Arctic neighbours.

Such a framework is in keeping with Canada's desire to preserve the quality of the environment, yet ensure the safe development and use of Arctic resources, while demonstrating sovereign control. The policy would encompass and support in particular long term research projects in the areas of cold water technology, materials specific to the cold Arctic environment, ice breaking design for commercial and specialized vessels and for hydrographic survey, re-supply of project and resident sites, development of the eastern Arctic route in co-operation with other Arctic neighbours and systems for limitation and clean-up of spills. Existing government policies on science and procurement would be used as "pre-positioning" tools to achieve the goal to continue the very necessary partnership of government and industry with the current temporary decline of economic activity in the Canadian Arctic; it requires the use of government procurement policy to be directed more towards the Arctic. This can be achieved in two ways:

- first, by developing the key marine infra-structure needed to bring the Canadian Arctic community into the 1990's;

- second, by developing the environmentally safe ice tanker system and similar commercial vessel development; a refocussing of policy on the existing industrial support and R&D programmes to ensure that they support the achievement of technological sovereignty in the Canadian Arctic. This would be an ideal method to proceed.

The purpose of this strategy is to ensure a state of readiness to meet the challenges of potential development and to maintain our international status by strategic alliances with our northern neighbours. The spin off of such research establishes a Canadian international presence, while providing many job opportunities to Canadians.

Canada must act now to implement a strategy that will address the needs of the year 2000 and onwards.

L'ARCTIQUE EN 2000: UNE ALLIANCE EN VOIE DE PROGRÈS

Séminaire un sujet de
LA RECHERCHE DE TRANSPORTS MARITIMES DANS L'ARTIQUE

février 1990

Parrainné par le CONSEIL CONSULTATIF DU TRANSPORT MARITIME R&D.

TP 10153F

ARCTIQUE 2000 :

UNE ASSOCIATION EN MARCHE

Marine Transportation R & D Advisory Board
Conseil consultatif de R & D sur le transport maritime
ULS Corporation
49 Jackes Avenue
Toronto, Ontario
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L'hon. Doug Lewis, C.P., député
Ministre des Transports
Édifice Transport Canada
Ottawa (K1A 0N5)

Monsieur,

Le Conseil consultatif de la recherche et du développement (R&D) en matière de transport maritime, en tant que conseiller de la Garde côtière canadienne et de Transports Canada, a récemment tenu un atelier mixte gouvernement/ industrie ayant pour objet la R&D en matière de transport maritime dans l'Arctique. L'atelier, qui a été commandité par le secteur du transport maritime et coordonné par notre Conseil régional sur l'Arctique, regroupait un éventail de spécialistes du transport maritime et du gouvernement, ainsi que des représentants des territoires du nord.

Dans le passé, le risque élevé que représente le transport maritime dans l'Arctique a incité le gouvernement et l'industrie à collaborer étroitement sur le plan de la recherche et du développement. Au cours de la dernière décennie, le Canada s'est distingué dans le développement de la technologie facilitant la navigation et les autres activités maritimes dans les eaux arctiques. La politique du gouvernement canadien du début des années 1970, visant à atteindre l'excellence sur le plan de la navigation dans les eaux recouvertes de glaces, a fourni l'élan nécessaire pour accélérer le développement du milieu marin arctique. Cette politique a été renforcée par la construction du N/M ARCTIC qui répond aux besoins de transport particuliers de la Nanisivik Mines. Par conséquent, le Canada est devenu le chef de file international en ce qui a trait à la conception des brise- glace, de la navigation dans l'obscurité et de l'exploitation de navires convertis pour transporter du pétrole en toute sécurité dans les eaux arctiques.

Un grand nombre de personnes compétentes de l'industrie et du gouvernement ont assisté à l'atelier. Elles reconnaissent le besoin de restrictions budgétaires et l'intérêt grandissant en faveur de la protection de l'environnement, mais elles ont conclu qu'une nouvelle association de l'industrie et du gouvernement est essentielle à l'atteinte de leurs objectifs communs. En l'absence de grands projets d'exploitation des ressources dans l'Arctique, on estime que la Stratégie annuelle des approvisionnements canadiens pourrait sans aucun doute être utilisée pour venir en aide aux domaines dans lesquels la recherche et le développement sont nécessaires pour permettre au Canada de conserver et d'augmenter sa compétence dans les domaines liés à l'Arctique et d'explorer avec assurance les systèmes de transport transpolaire qui serviront les intérêts du Canada au cours des années 1990 et du siècle prochain.

> Pour ce faire, il faudrait entre autres avoir recours à la recherche et au développement dans les domaines de la conception, de la construction et du fonctionnement de navires-citernes sans danger pour l'environnement pour le transport des ressources et le réapprovisionnement, y compris pour la capacité maritime nécessaire à l'exploitation au large de la côte est.

L'interface terminal-navire à plusieurs endroits où les eaux sont recouvertes de glaces exige encore des travaux de recherche et de développement. L'application et le perfectionnement de la technologie actuelle servant au choix d'une route dans les eaux arctiques qui soit sûre et sans danger pour l'environnement sont essentiels à l'élaboration des besoins de transports.

> S'il concevait des navires spéciaux permettant de faire face aux déversements qui peuvent menacer l'environnement arctique, le Canada deviendrait un chef de file dans un domaine qui préoccupe le monde entier.

Le document ci-joint intitulé "Arctique 2000 - Une association en marche" décrit de façon plus détaillée les éléments qui appuient de telles politiques. Afin de garder notre avance sur le plan de la technologie arctique, de participer activement avec les territoires du nord à la protection de l'environnement et de conserver notre position de chef de file par rapport à nos voisins de l'Arctique au cours du siècle prochain, il est essentiel que notre gouvernement élabore et défende dès aujourd'hui les politiques essentielles nous permettant d'atteindre ces objectifs.

Les documents ci-joints vous sont présentés au nom de mes collègues du Conseil consultatif sur le transport maritime dans l'espoir qu'ils contribueront à ce projet. J'aimerais avoir l'occasion de vous rencontrer et de discuter davantage de cette priorité.

Je vous prie d'agréer, Monsieur le Ministre, l'expression de mes sentiments distingués.

D. Maxwell

D. Maxwell
President,
ULS Corporation

Att.

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CONTEXTE

Au cours de ses discussions régulières avec les quatre conseils régionaux, le Conseil consultatif de la recherche et du développement (R&D) en matière de transport maritime a conclu qu'il fallait mettre l'accent sur la prochaine décennie et s'organiser. Un atelier ayant pour objet la R&D en matière de transport maritime dans l'Arctique a été organisé par le Conseil régional sur l'Arctique. Il a eu lieu à Ottawa, les 5 et 6 février 1990.

Un grand nombre de spécialistes de l'industrie et du gouvernement y ont participé. Ils se sont exprimés sur un grand éventail de sujets liés au transport maritime. Les invités ont discuté des impératifs et perspectives actuels, des difficultés techniques et d'une stratégie pour l'avenir.

Le document intitulé "Charting our Course : Report" (TP 10151-E) donne le résumé de toutes les discussions et conclusions de l'atelier.

RÉALISATIONS ET SITUATION

Le Canada a fait de grand progrès sur le plan de la mise en valeur de l'Arctique au cours des dix dernières années. L'élaboration, la construction et l'exploitation du N/M ARCTIC ont donné lieu à la recherche et au développement dans tous les domaines de l'exploitation dans des conditions dangereuses. L'exploitation du N/M ARCTIC a permis au Canada d'acquérir des compétences uniques dans les domaines de la navigation dans les glaces, dans l'obscurité et l'exploitation générale des navires commerciaux dans ce milieu.

La construction du N/M ARCTIC a d'abord été lancée parce qu'il fallait un navire pour le transport de concentrés d'une mine de Nanisivik. Cependant, à l'heure actuelle, il existe peu de projets canadiens d'envergure dans l'Arctique qui se trouvent à un stade où les travaux d'exploitation exigent de la recherche. Or, si on ne poursuit pas ces travaux dans l'avenir, tous les efforts déployés par le Canada dans le passé auront été vains. Nous devons conserver et améliorer notre capacité de maintenir et de développer le transport maritime dans les eaux arctiques, si nous voulons conserver notre position de chef de file au plan technologique.

La participation du Canada à la recherche conjointe et à la surveillance environnementale dans les régions circumpolaires a fourni aux entreprises canadiennes des occasions de vendre leurs services aux pays voisins de l'Arctique.

L'élaboration de la technologie des régions froides et son application à des produits et services sophistiqués a valu au Canada une réputation mondiale, surtout dans le domaine de l'équipement de navigation et la conception des navires de cote arctique.

CANADIAN TANKER OPENS UP ARCTIC WATERS

Sunday Herald, April 1, 1990

By Gordon Jaremko

Behind the scenes of the clamor for shipping restrictions in the wake of Exxon Corp.'s oil spill last year offshore of Alaska, a made-in-Canada tanker is opening up far tougher waters, much farther north.

Where the M.V. Arctic sails, sea ice is up to 2.5 metres thick. Deep snow conceals tall ridges. Steersmen contend with 24-hour darkness. Normal compasses are useless in the neighborhood of the magnetic north pole.

While the vessel is only about one-tenth the size of the supertankers plying southern oceans, it is big enough to be a commercial enterprise: 210 metres long, 23 metres wide.

The ice-breaking ORO, or "ore-bulk-oil" tanker, carries 25,000 tonnes of lead and zinc or 145,000 barrels of oil.

The M.V. Arctic does the job where the place names recall epics of polar exploration: Baffin Bay, Lancaster Sound, Parry Channel, Bathurst Island, Melville Island.

A 200-kilometre leg of one trip, across Lancaster Sound to the Nanisivik mine of Strathcona Mineral Services Ltd. took 26 days of "round-the-clock ramming, backing and ramming again through pack ice.

When the ship picks up cargoes for Calgary's Panarctic Oils Ltd. from its Bent Horn field on Cameron Island - and it did twice last summer, behind the scenes of the Exxon tanker fuss - it enters the most forbidding region of all.

Designated "ice zone one" by Canadian shipping regulations, the area is clogged with floating glaciers that thicken through years of winter freeze-ups which the Arctic summer is too short to melt entirely.

Yet the voyages of the M.V. Arctic, described by Canarctic vice-president Martin Luxe to a recent international conference in Calgary by the Society of Naval Architects and Marine Engineers, are not news.

The lack of attention outside a narrow circle of professionals is the highest compliment possible for the shipowners: Ottawa-based Canarctic Shipping Co., a private consortium 51-per-cent financed by the federal government.

Twelve years after the vessel was launched as a trial run at turning Arctic travel into a matter of business routine to tap northern resources, the operators say the goal is in sight.

By now, Luxe reported, the hull and bow of the ice-breaking tanker have proved they can withstand just about anything. Only a bigger engine would be necessary for the ship to ram its way through even tougher voyages.

The only damage since a 1984 refit to toughen the M.V. Arctic for its Panarctic oil loadings was done to a bulwark or guard rail on its deck, when the ice attacked from an unexpected direction.

Luxe reported, "This was caused by a large piece of ice which had been broken by the vessel. It rotated on edge so that it towered above the vessel, then, continuing its rotation, it fell onto the deck, flattening the bulwark."

After a long string of successful voyages, the vessel has developed an Arctic trading season that lasts most of the year.

In summer, the ship takes batches of oil to Arctic mines, native communities and electric power stations, then loads most of Panarctic's output on other tankers, at ice-free rendezvous points, for deliveries to Montreal.

The rest of the year, the M.V. Arctic is a fixture of the international product-shipping trade.

Lead and zinc concentrates are delivered to markets from Europe to the Gulf of Mexico. The tanker easily carries winter loads of jet fuel, gasoline and other fuels up the St. Lawrence River or through the Baltic Sea.

While Canarctic isn't kidding itself that markets and prices will justify building a supertanker-sized version of the M.V. Arctic any time soon, Luxe adds that the preliminaries for the next, giant step are coming together.

"We have developed a lot of unique Canadian technology for moving in ice," he said, including finely tuned, electronic navigational aids as well as the brute strength to bash through the polar pack.

Luxe said Canarctic has learned enough at least to design a northern shipping giant, and will try its hand at the exercise over the next four or five years.

When the Arctic's turn comes for large-scale resource development, the Canadian consortium aims to be ready to be in on the ground floor with equipment proven to work safely in the harshest conditions.

STRUCTURE GOUVERNEMENTALE ET RELATIONS AVEC L'INDUSTRIE

Pendant l'atelier, de nombreux commentaires ont porté sur le grand nombre de ministères gouvernementaux qui prennent part, de près ou

de loin, au développement du transport maritime ou à des études connexes. Il s'est avéré nécessaire de regrouper un minimum des travaux exécutés par un grand nombre de participants. On a reconnu que les préoccupations du Conseil des Sciences étaient fondées au chapitre du regroupement, des sources d'information et de l'amélioration des réseaux d'information.

De plus, s'il est admis que la politique du gouvernement considère la science et la technologie comme le tremplin du 21e siècle pour les entreprises canadiennes, chaque secteur du développement doit élaborer ses propres méthodes pour devenir compatible avec la politique d'ensemble du gouvernement et pour définir ses projets dans le contexte de la politique. Si le gouvernement définit une politique coordonnée, il précisera par le fait même la position du secteur canadien du transport maritime par rapport à une variété de contrats d'acquisition gouvernementaux.

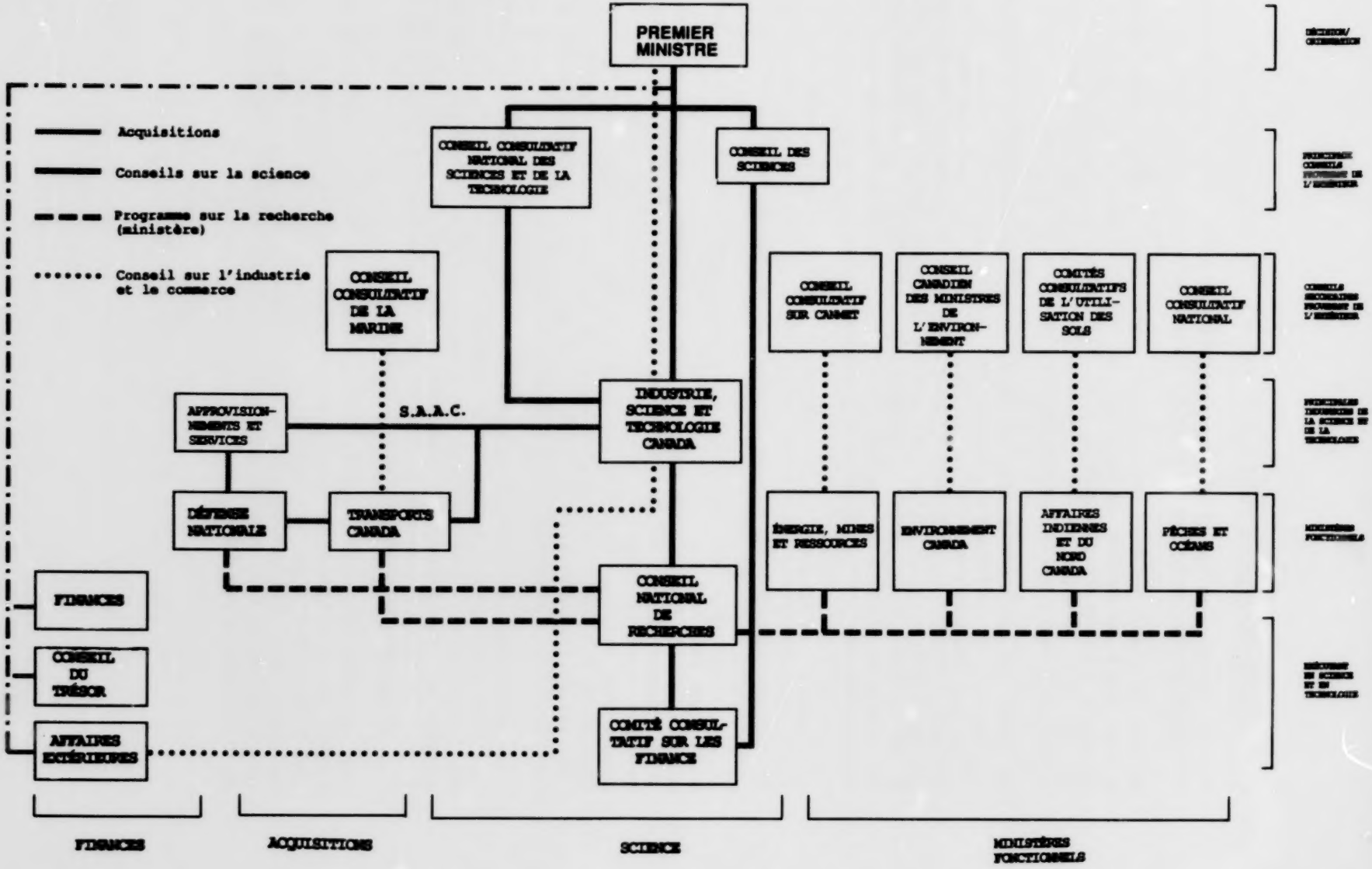
L'interaction particulière des ministères, groupes consultatifs et organismes de recherche participants est représentée sur le diagramme ci-joint. Si chaque ministère connaît l'orientation générale de la politique du transport maritime dans les eaux arctiques, un grand nombre de ses programmes peuvent contribuer à ce développement. Le concept envisagé est de faire en sorte que les contrats d'acquisition des ministères, en particulier les gros contrats, soient compatibles avec la politique visant à appuyer la recherche et le développement, ce qui permettra d'atteindre l'excellence en matière de transport maritime dans l'Arctique. Des contrats d'acquisition comme la construction navale, l'équipement maritime, les véhicules, les technologies spatiale et de pointe, sont autant de domaines qui peuvent largement contribuer au développement au Canada. Plusieurs d'entre eux dépendent directement de la précision de notre politique sur l'Arctique.

L'industrie collabore avec le gouvernement à tous les niveaux en répondant aux exigences opérationnelles et en participant à la recherche. De même, les associations commerciales et les conseils consultatifs permettent d'élargir la communication. L'association de l'industrie et du gouvernement à tous les niveaux assurera la mise en oeuvre efficace des programmes de R et D conçus pour le développement de tout le pays.

Les représentants des territoires du nord se sont montrés très intéressés à l'atelier et ont clairement laissé savoir qu'ils seraient heureux de s'associer à toute forme de recherche et de développement concernant les régions du nord. Il a été reconnu qu'on pourrait obtenir beaucoup d'aide et d'expérience en demandant aux personnes qui vivent et travaillent dans ces régions de fournir des commentaires.

ORGANIGRAMME POUR LA FORMULATION DE LA PORTÉE DES POLITIQUES INDUSTRIELLES EN MATIÈRE DE SCIENCE ET DE TECHNOLOGIE

(À L'EXCEPTION DES PROVINCES ET DES TERRITOIRES)



PRÉOCCUPATIONS ET QUESTIONS PENDANT L'ATELIER

Le climat international actuel indique un regain de l'intérêt de nos voisins de l'Arctique pour la technologie du transport maritime dans l'Arctique, mais il y a également une diminution des demandes de projet du côté canadien. Comme on n'exploite pas de ressources de pétrole ou de gaz dans l'Arctique en ce moment, qu'il n'y a pas de besoin de transport connexe et qu'on n'a pas besoin non plus d'exploiter immédiatement certaines ressources minérales, le développement commercial prévu pour les prochaines années n'exigera pas forcément de nouveaux projets de recherche et de développement d'envergure. On craint donc que la technologie canadienne dans l'Arctique ne se fasse dépasser si nous ne trouvons pas d'autres méthodes pour entretenir et développer progressivement ces connaissances. De grands projets finiront par être lancés et créeront des besoins de R et D, mais il sera peut-être trop tard.

Avec l'intérêt grandissant du monde pour l'Arctique et l'Antarctique, la concurrence internationale peut être telle qu'elle touchera le profil industriel du Canada. Sans projet industriel immédiat, il y aura probablement une diminution de l'investissement dans la R et D concernant le milieu marin arctique. Par conséquent, les domaines-clés de l'expertise technologique canadienne sont menacés de disparition.

Le "cercle polaire" est un gros enjeu pour le Canada. Le pays a besoin de conserver son avantage technologique acquis au cours de la dernière décennie. Il doit s'efforcer de conserver son avance technologique dans les eaux arctiques, c'est-à-dire sa capacité de superviser et de diriger le développement de toutes les phases du transport dans cette région. La collaboration avec les partenaires circumpolaires, surtout l'URSS et les autres principaux intervenants dans l'Arctique, est primordiale, mais ces associations et relations ne peuvent être nouées qu'à partir d'une position technologique forte.

Il n'existe pas encore de moyens permettant d'assurer le transport maritime dans l'Arctique à longueur d'année. Au cours de la prochaine décennie, l'accent doit porter sur l'élaboration d'une capacité maritime qui permettra de mettre en valeur les ressources énergétiques de l'Arctique au siècle prochain. Nous devons redéfinir nos objectifs afin de maintenir notre position de chef de file au cours du 21e siècle.

ALASKA TO TEST POLAR ROUTE TO EUROPE

The Journal of Commerce, Wednesday March 28, 1990

By John Davies

Ports in Alaska are drawing plans to move the first American cargo to Europe through a polar ice channel across the Soviet arctic, just as the United States and the Soviet Union move toward a new bilateral shipping agreement.

Ports Alaska, a group of 14 Alaskan ports, said it will demonstrate the potential of the Soviet ice channel this summer by moving containers of salt cod through the channel to Europe.

Larry Dinneen, co-chairman of Ports Alaska and executive director of the Port of Anchorage, said preliminary plans call for Vladivostok-based Far East Shipping Co. to carry the preserved fish from Dutch Harbor in the Aleutians to buyers in Portugal.

"We're going to do it this summer, one way or other," he said. "If we have to put it onto Soviet fishing boats, we're going to get that fish to Europe."

Executives at Alyeska Seafoods in Dutch Harbor, which produces salt cod, frozen cod and canned salmon, have expressed interest in shipping their products through the Soviet channel on a trial basis.

Paul Fuhs, mayor of Unalaska and major proponent of the new route, said Alyeska has agreed to provide cod for the demonstration shipment.

Mr. Fuhs said Soviet managers at Far East Shipping Co. are proposing to make three calls a month into Dutch Harbor with ice-strengthened ships capable of hauling the equivalent of 750 20-foot containers.

"The Soviets are saying, 'Forget the demonstration - we do this all the time,'" Mr. Fuhs said. "But the seafood shippers are saying, 'Show me - show me that you can handle the product to normal shipping standards so that it arrives in good marketable condition.'"

Soviet icebreakers maintain the polar channel along that country's north coast year-round to provide access to northern cities along rivers flowing into the Arctic Ocean. In practice, most freight moves during the late spring, summer and early fall, when ice conditions are favorable.

Alaskan shippers want to try the Soviet route because they believe it may be quicker than shipping fish to Europe by way of the Panama Canal.

U.S. and Soviet negotiators are scheduled to meet in late April in Moscow to try to hammer out a bilateral agreement on issues such as cargo sharing, advance notice for ship calls near military bases and tariff levels.

Previous agreements that allowed Soviet liner service at West Coast ports were allowed to expire after 1979 as part of a series of trade sanctions adopted by the Carter administration to protest the Soviet invasion of Afghanistan. A separate fisheries treaty allows Soviet ships to continue to call at Dutch Harbor for supplies.

Mr. Dinneen said the Alaskan ports would like to move the demonstration cargo under a new bilateral agreement, but are prepared to use provisions in the fisheries treaty if the new shipping pact is delayed.

Both the port executive and those involved with the negotiations in Washington, D.C., said substantial progress has been made in talks with Soviet maritime authorities. Tentative agreement was reached on a cargo-sharing arrangement under which one-third of cargo moving between the countries would be moved on U.S.-flag ships, one-third on Soviet ships and one-third by any party, one U.S. negotiator said.

Grain exporters have argued that such a rule should not apply to bulk cargo because the U.S.-flag fleet is small and would be in a position to charge shippers higher prices than they would have to pay if ships of any registry could carry the cargo.

The Soviets are still pressing for the right to call at U.S. ports with one day's notice instead of the 14 days now required. Mr. Dinneen said the U.S. team is expected to offer access to the Soviets on four days' advance notice.

Merits of granting the Soviets most-favored-nation status, with its reduced schedule of import tariffs, remain under discussion, the U.S. negotiator said.

He said U.S. and Soviet teams are sufficiently close that both sides regard it possible that an agreement could be concluded at the end of next month. If so, they would recommend that it be considered by President Bush and Soviet President Mikhail Gorbachev at their scheduled summit in June.

Mr. Dinneen said plans for the demonstration shipment call for salt cod to be delivered on an all-sea route to Portugal.

"Everybody up here is getting primed up to move at least the salt cod," he said. "It will be an insignificant amount in terms of volume, but it will show how it can be done."

Fish processing firms in Alaska are keenly interested in the polar route to Europe as a possible means of marketing high-value Alaskan seafood more quickly. Some Alaskan shippers complain that most available shipping services take at least two weeks to move fresh products to European markets.

CONCLUSIONS DE L'ATELIER

La demande de R et D en matière de transport maritime dans l'Arctique est maintenant modelée par un nouveau cadre stratégique. Les forces traditionnelles ont été remplacées par de nouvelles priorités, c'est-à-dire celles qui ont trait à la protection de l'environnement et à la compétitivité du Canada. Elles offrent aux firmes et aux chercheurs canadiens l'occasion d'exploiter cette voie et d'acquérir une nouvelle expertise par la vente de leurs services sur le marché mondial.

1. Activité circumpolaire

Il a été reconnu que le Canada joue un rôle de premier plan au sein de la communauté internationale dont relève l'Arctique. Parler d'"Arctique canadien" est un peu limité; en fait, le Canada est l'un des huit pays qui gèrent l'Arctique. Cette vue plus globale se reflète sur la participation du Canada à un nombre grandissant de projets bilatéraux et internationaux dans l'Arctique, notamment au "Canada-USSR Science and Technology Agreement" et au "Finnish Initiative on environmental monitoring and protecting the Arctic". Par conséquent, les entreprises canadiennes qui possèdent une expérience et une compétence pour l'Arctique profitent d'un plus grand nombre d'occasions de vendre leurs services sur les marchés étrangers, et de participer à des programmes de recherche financés par le Canada et des pays étrangers ou par ces derniers seulement.

Les activités pétrolières et gazières augmentent, surtout dans les eaux au large de l'Union soviétique. On sait que cette région renferme de très grandes réserves de pétrole et de gaz, et l'Union soviétique, qui fait face à une crise économique interne qui prend de l'ampleur, se tourne vers des entreprises étrangères pour l'aider à exploiter ces ressources. Les entreprises canadiennes sont bien placées pour prendre les rênes de ce nouveau marché, à condition qu'elles maintiennent leur avance technologique.

2. Expertise technologique pour les régions froides

Le Canada jouit d'une réputation de chef de file mondial en matière de technologie pour les régions froides. Avec l'Arctique en guise de laboratoire, les entreprises, universités et instituts de recherches canadiens ont acquis une base considérable de connaissances sur l'exploitation en régions froides et ont élaboré un grand nombre de produits pouvant servir dans ces régions. Ces produits et services font partie des plus avancés et des plus sophistiqués au monde, et sont très compétitifs sur les marchés internationaux. De nouveaux concepts de navires de cote arctique et d'équipement de navigation sophistiqué sont deux produits où le Canada est à l'avant-garde.

De nouvelles occasions existent et les technologies actuelles ont besoin d'être améliorées, mais on ne peut y arriver que si des ressources suffisantes sont affectées à la recherche et au développement dans ce domaine. D'autres pays, notamment le Japon, la Norvège et les États-Unis, injectent de plus en plus de fonds dans la technologie des régions froides et l'avance technologique qu'a pris le Canada au cours des années 1970 et au début des années 1980 diminue rapidement.

ICEBREAKER STUDY EXCITES INTEREST

From Kazuo Takita, Tokyo

The construction of two 60,000-tonne icebreakers currently under study by Sakhalin Oil Development Co (Sodeco), a Tokyo-based partner in the Sakhalin oil-gas project with the Soviet Union, has attracted the interest of Japanese shipbuilders.

Japanese shipbuilders have built South Polar expedition observation ships with ice-breaking capability for the Ministry of Education, but have no experience in building a merchant marine icebreaker.

However, the industry has jointly carried out technological research and development (R&D) projects to build an icebreaker for oil exploration in the Arctic Beaufort Sea in Canada.

Since then, the Ship Research Institute, part of the Ministry of Transport in Tokyo, has been exchanging technical data and reference materials with Canada to further advance R&D on ship design for Arctic navigation.

Research results will be announced before the end of March 1992.

According to the study, Sodeco will require at least two 60,000-tonne icebreakers to explore gas and oil fields and transport gas and crude oil from the continental shelf in Sakhalin to Japan.

The company will import 5 million tonnes a year beginning in 1994.

The icebreaker must be capable of navigating through the 50-centimetre thick ice in the sea.

Sodeco was established in Tokyo in October 1974 and participated in oil and gas development projects in the continental shelf of the Soviet-held Sakhalin Islands.

The project partner is the Soviet Ministry of Foreign Trade.

Sodeco has discovered two promising structures on the continental shelf as a result of the exploration up to 1982.

One is Odoptu, discovered in 1977, and the other Chaivo, discovered in 1979.

It completed the exploration in 1983 following five drillings on the Odoptun structure.

3. Choix des routes commerciales circumpolaires

Le commerce international continue de prendre de l'expansion avec près de 90 p. 100 du volume transporté par la marine marchande. Pour des routes plus longues, comme entre le Japon et l'Europe, le voyage peut durer plus d'un mois. Les passages du nord-ouest et du nord-est qui passent par l'Arctique offrent une route qui raccourcit considérablement la durée des voyages. À la lumière des bouleversements marqués qui ont lieu en Union soviétique, il est possible que le passage du nord-est soit ouvert un jour au transport commercial. Une délégation commerciale soviétique doit visiter le Canada en mai 1990 pour discuter de la coopération dans cette région. De même, le Canada pourrait envisager le transport par le passage du nord-ouest comme autre route de navigation dans l'avenir.

Il existe deux domaines où le Canada peut faire valoir son expertise. Les Canadiens sont en avance dans le domaine de la conception des navires de cote arctique et les entreprises canadiennes ont élaboré des services de soutien nécessaires pour entretenir les routes de navigation polaire. Ces services sont entre autres la télédétection, les prévisions météorologiques et sur les glaces et la cartographie. Ce sont tous des domaines où la technologie du Canada est l'une des meilleures au monde.

4. Nouveaux services de transport maritime dans l'Arctique

De tout temps, le transport maritime dans l'Arctique a été lié au transport de ressources de cette région (le pétrole, les minerais et de moins en moins, le grain), en plus du réapprovisionnement des localités. Cette optique traditionnelle est peut-être trop étroite, et d'autres possibilités de transport maritime ont été énumérées par les participants à l'atelier. Elles sont les suivantes :

- nouveaux navires et technologies nouvelles pour améliorer le réapprovisionnement des localités;
- navires spéciaux conçus pour protéger l'environnement arctique;
- navires de passage (notamment le tourisme).

5. Les défis de R&D en matière de transport maritime dans l'Arctique

La communauté maritime de l'Arctique risque de se donner l'illusion que tous les problèmes difficiles ont été réglés en ce qui a trait à l'exploitation d'un système maritime dans l'Arctique. Pourtant il existe encore certaines faiblesses technologiques sérieuses et elles doivent absolument être corrigées pour que soit possible le transport des ressources à longueur d'année. Ces faiblesses sont les suivantes :

- connaissance de la pression d'intensité moyenne appliquée par les glaces;
- utilisation d'acier très résistant;
- méthodes de soudage;

FIRM INTERESTED IN SHIPPING COD VIA POLAR ROUTE

The Journal of Commerce, Friday, March 30, 1990

By John Davies

SEATTLE - Seafood shippers wanting quick passage to Europe by a polar route say rates and schedules will be key factors in their decision whether to use the Soviet channel.

Winn Brindle, general manager of Alyeska Seafoods here, said his company will consider the possibility of shipping cod from Dutch Harbor, Alaska, to Europe on the polar route if a pending bilateral shipping treaty with the Soviet Union is approved.

"We're going to have to kick it around the group - there are a lot of things like rates and timing and insurance to be considered," he said.

Alyeska now ships most of its salt cod to Europe on unscheduled freighters, which take up to 50 days to haul it from Alaska through the Panama Canal and then across the Atlantic.

"If the Soviet route would be faster, it's something we'd want to check into," Mr. Brindle said.

Far East Shipping Co., a Soviet state firm, has proposed regular calls at Dutch Harbor to pick up seafood for delivery to Europe via an arctic channel along the north coast of the Soviet Union.

Mr. Brindle said that like any shipper, Alyeska will have to consider rates and whether transit can be made safely at the time when cargo is available. He noted, for example, that most salt cod is produced in the winter and that the Soviet channel may be reliable only in the summer.

"But I think we would be interested in looking at a proposal," he said.

Frank Kelty, a seafood manager at Alyeska's plant in Dutch Harbor, said the company definitely is interested in quick, low-cost shipments of cod to Europe.

He noted that prices in Norway and other Scandinavian countries are rising because fishery resources there are at very low levels.

But he also said that cost and reliability will be critical to use of the Soviet channel. "I'd be very leery of shipping any product through there in the winter, because there have been times when ships have got stuck," he said. "Shipment in summer is something we'd want to look at."

If cod shipments prove successful, Alyeska might also want to explore shipment of canned salmon to Britain via the Soviet route, he said.

Larry Dinneen, assistant director at the Port of Anchorage, and Paul Fuhs, mayor of Unalaska, have been working in an association of 14 harbors known as Ports Alaska to organize a demonstration shipment by way of the Soviet route this summer.

They said they believe commercial use of the polar route would help bring Alaska more into the mainstream of global cargo movement.

"We think the Soviets would want to haul cargo both ways and would backhaul something from Europe for either Japan or the West Coast," Mr. Fuhs said.

Executives at other large seafood companies operating in Dutch Harbor and Seattle said they are aware of the polar route project, but added that they either are waiting for approval of the Soviet bilateral shipping agreement or that they see no reason to change their current handling methods.

- maintien en position (interface navire-terminal);
- comparaison de formes de coque;
- essais et étalonnage complets;
- équipement de sécurité et d'évacuation;
- modélisation des glaces;
- performance des navires dans les glaces;
- prévisions des conditions d'englacement;
- équipement et méthodes de navigation dans les glaces;
- installations des terminaux;
- surveillance et nettoyage des déversements de pétrole.

6. Protection de l'environnement et navires-citernes renforcés pour la glace et sans danger pour l'environnement

Une stratégie se dégage : un "programme" complet visant à élaborer un réseau de navires-citernes renforcés pour la glace et sans danger pour l'environnement. Les recherches de base nécessaires à l'élaboration d'un tel projet sont :

- la conception de navires et les systèmes pour réduire le coût du transport dans l'Arctique;
- la compréhension et la protection de l'environnement;
- l'élaboration d'une interface navire-terminal.

Cette approche particulière semble offrir trois avantages évidents. Premièrement, un réseau de navires-citernes renforcés pour la glace et sans danger pour l'environnement soutiendrait plusieurs des considérations stratégiques susmentionnées; il permettrait d'ouvrir les routes polaires, d'appuyer le programme environnemental du gouvernement et il permettrait aux entreprises canadiennes d'acquérir de l'expertise dans la technologie des régions froides. Il fournirait également au Canada la technologie nécessaire à l'exploitation des ressources au large de la côte est.

Deuxièmement, un nombre considérable de projets en cours sur la recherche et le développement en matière de transport maritime dans l'Arctique ont trait à la sécurité. Cependant, même si la sécurité est perçue traditionnellement comme la protection de la vie et des biens, elle s'étend également à la sécurité de l'environnement. Dans ce contexte, la navigation de précision (dans les glaces) est perçue comme un élément central en ce qui a trait à la réduction du risque - si on navigue en toute sécurité, on protègera l'environnement.

Les programmes de R&D actuels qui visent à améliorer la sécurité favorisent également, de par leur nature, la protection de l'environnement. Cela signifie que pour la mise en valeur d'un réseau de navires-citernes renforcés pour la glace et sans danger pour l'environnement, il ne faudrait apporter que des modifications mineures aux programmes et objectifs actuels, mais que, bien sûr, il faudrait d'accorder des fonds supplémentaires pour d'autres programmes de R&D.

Enfin, le lien entre la R&D maritime dans l'Arctique et la protection de l'environnement rejoint la grande priorité du public en général et, par conséquent, celle du gouvernement. Il s'agit de l'"objectif" de base auquel tous les groupes d'intérêt peuvent se rallier. Cet objectif est compatible avec le programme environnemental et devrait donc être bien accueilli.

STRATÉGIE

Le Conseil consultatif sur la recherche et le développement maritime conclut que le concept d'association entre l'industrie et le gouvernement est la seule voie à suivre. Les futurs projets de recherche et de développement de l'industrie peuvent être intégrés aux besoins du gouvernement. On recommande d'élaborer des politiques gouvernementales qui définissent clairement la nécessité d'assurer le développement naturel du transport maritime dans l'Arctique canadien en collaboration avec les habitants des territoires du nord et avec nos voisins de l'Arctique.

Un tel cadre rejoint le désir du Canada de préserver la qualité de l'environnement et d'assurer l'exploitation et l'utilisation sécuritaires des ressources de l'Arctique tout en conservant sa souveraineté. La politique devrait prévoir et appuyer, en particulier, des projets de recherche à long terme dans les domaines de la technologie en eau froide, des matériaux appropriés au froid de l'Arctique, de la conception de navire brise-glace pour la navigation commerciale et spécialisée et les levés hydrographiques, du réapprovisionnement de sites de projets et de localités, de l'établissement d'une route dans l'est de l'Arctique en collaboration avec d'autres voisins de l'Arctique et des systèmes pour la retenue et le nettoyage des produits déversés. Les politiques gouvernementales actuelles sur la science et les contrats d'acquisition feraient fonction de "guides" pour atteindre l'objectif qui consiste à entretenir l'association essentielle du gouvernement et de l'industrie en raison de la diminution temporaire actuelle de l'activité économique dans l'Arctique canadien; il faut que le recours aux politiques d'acquisition du gouvernement soit orienté davantage vers l'Arctique. Cet objectif peut être atteint de deux façons:

- premièrement, en élaborant l'infrastructure maritime nécessaire pour mettre la communauté arctique canadienne à l'heure des années 1990;

- deuxièmement, en mettant au point un système de navires-citernes renforcés pour la glace et sans danger pour l'environnement et de navires commerciaux semblables; en réorientant la politique vers l'appui industriel existant et les programmes de R&D de façon à permettre au Canada d'atteindre la souveraineté technologique dans l'Arctique canadien. Ce serait la méthode idéale.

L'objet de cette stratégie est de se tenir prêt à relever les défis sur le plan du développement et de maintenir notre statut international à l'aide d'alliances stratégiques avec nos voisins du Nord. De telles recherches assureraient une place au Canada sur le plan international tout en créant des emplois pour les Canadiens.

Le Canada doit agir immédiatement s'il veut mettre en oeuvre une stratégie qui répondra aux besoins de l'an 2000 et des années qui vont suivre.